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PATENT  
ATTORNEY DOCKET NO. 46884-5484

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Tomonori KAWAKAMI et al.

Application No.: 10/582,786

Filed: June 13, 2006

For: MICROPARTICLES, MICROPARTICLE  
PRODUCTION METHOD, AND  
MICROPARTICLE PRODUCTION

Confirmation No.: 5041

Group Art Unit: 3725

Examiner: Unassigned

Commissioner for Patents  
U.S. Patent and Trademark Office  
Customer Window  
Alexandria, VA 22314

Sir:

**SUBMISSION OF INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

Applicants bring to the attention of the Examiner the attached document.

Attached is an English-language translation of an International Preliminary Examination Report ("IPER"), including PCT/IB/373 and English translation of PCT/ISA/237, dated August 31, 2006 that issued in a related PCT/JP2004/018657 application. Applicants respectfully request that the Examiner consider the IPER as it relates to the above-identified application.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that the listed document is material or constitute "prior art." If it should be determined that the listed document does not constitute "prior art" under United States law, Applicants reserve the right to present to the office the relevant facts and law regarding the appropriate status of such document.

Applicants further reserve the right to take appropriate action to establish the patentability of the disclosed invention over the listed documents, should one or more of the documents be applied against the claims of the present application.

**EXCEPT** for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573.

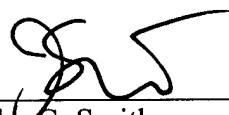
This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

**DRINKER, BIDDLE & REATH LLP**

Dated: January 25, 2007

By:

  
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From the INTERNATIONAL BUREAU

**PCT**

NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rules 44bis.3(c) and 72.2)

To:

HASEGAWA, Yoshiki  
SOEI Patent and Law Firm  
Ginza First Bldg.  
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Chuo-ku, Tokyo 104-0061  
JAPON

Date of mailing (day/month/year)

31 August 2006 (31.08.2006)

Applicant's or agent's file reference  
FP04-0388-00**IMPORTANT NOTIFICATION**International application No.  
PCT/JP2004/018657International filing date (day/month/year)  
14 December 2004 (14.12.2004)

Applicant

HAMAMATSU PHOTONICS K.K. et al

**1. Transmittal of the translation to the applicant.**

The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

**2. Transmittal of the copy of the translation to the designated or elected Offices.**

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

**3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).**

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

The International Bureau of WIPO  
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## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference FP04-0388-00	FOR FURTHER ACTION		See item 4 below
International application No. PCT/JP2004/018657	International filing date (day/month/year) 14 December 2004 (14.12.2004)	Priority date (day/month/year) 18 December 2003 (18.12.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant HAMAMATSU PHOTONICS K.K.			

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).		
2.	This REPORT consists of a total of 6 sheets, including this cover sheet.  In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.		
3.	This report contains indications relating to the following items:		
	<input checked="" type="checkbox"/> Box No. I	Basis of the report	
	<input type="checkbox"/> Box No. II	Priority	
	<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	
	<input type="checkbox"/> Box No. IV	Lack of unity of invention	
	<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	
	<input type="checkbox"/> Box No. VI	Certain documents cited	
	<input type="checkbox"/> Box No. VII	Certain defects in the international application	
	<input type="checkbox"/> Box No. VIII	Certain observations on the international application	
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).		

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 338 82 70	Date of issuance of this report 22 August 2006 (22.08.2006)
	Authorized officer  Masashi Honda  e-mail: pt08@wipo.int

Form PCT/IB/373 (January 2004)

BEST AVAILABLE COPY

## PATENT COOPERATION TREATY

TRANSLATION

PCT

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing  
(day/month/year)

Applicant's or agent's file reference

FP04-0388-00

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2004/018657

International filing date (day/month/year)

14.12.2004

Priority date (day/month/year)

18.12.2003

International Patent Classification (IPC) or both national classification and IPC

Applicant

HAMAMATSU PHOTONICS K.K.

## 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

## 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/018657

Box No. 1	Basis of this opinion
1.	<p>With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.</p> <p><input type="checkbox"/> This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).</p>
2.	<p>With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:</p> <p>a. type of material</p> <p><input type="checkbox"/> a sequence listing</p> <p><input type="checkbox"/> table(s) related to the sequence listing</p> <p>b. format of material</p> <p><input type="checkbox"/> in written format</p> <p><input type="checkbox"/> in computer readable form</p> <p>c. time of filing/furnishing</p> <p><input type="checkbox"/> contained in the international application as filed.</p> <p><input type="checkbox"/> filed together with the international application in computer readable form.</p> <p><input type="checkbox"/> furnished subsequently to this Authority for the purposes of search.</p>
3.	<p><input type="checkbox"/> In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.</p>
4.	<p>Additional comments:</p>

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY		International application No. PCT/JP2004/018657																		
<b>Box No. V</b>	<b>Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability: citations and explanations supporting such statement</b>																			
<p><b>1. Statement</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; vertical-align: top;">Novelty (N)</td> <td style="width: 50%;">           Claims <u>1-15</u> </td> <td style="width: 20%; text-align: right;">YES</td> </tr> <tr> <td></td> <td>Claims _____</td> <td style="text-align: right;">NO</td> </tr> <tr> <td style="vertical-align: top;">Inventive step (IS)</td> <td>           Claims <u>3, 4, 10, 11</u> </td> <td style="text-align: right;">YES</td> </tr> <tr> <td></td> <td>Claims <u>1, 2, 5-9, 12-15</u></td> <td style="text-align: right;">NO</td> </tr> <tr> <td style="vertical-align: top;">Industrial applicability (IA)</td> <td>           Claims <u>1-15</u> </td> <td style="text-align: right;">YES</td> </tr> <tr> <td></td> <td>Claims _____</td> <td style="text-align: right;">NO</td> </tr> </table>			Novelty (N)	Claims <u>1-15</u>	YES		Claims _____	NO	Inventive step (IS)	Claims <u>3, 4, 10, 11</u>	YES		Claims <u>1, 2, 5-9, 12-15</u>	NO	Industrial applicability (IA)	Claims <u>1-15</u>	YES		Claims _____	NO
Novelty (N)	Claims <u>1-15</u>	YES																		
	Claims _____	NO																		
Inventive step (IS)	Claims <u>3, 4, 10, 11</u>	YES																		
	Claims <u>1, 2, 5-9, 12-15</u>	NO																		
Industrial applicability (IA)	Claims <u>1-15</u>	YES																		
	Claims _____	NO																		
<p><b>2. Citations and explanations:</b></p> <p>The following document 1 cited in the international search report describes, for example:</p> <p>"Claim 1 A method for manufacturing particles of an organic compound which has the characteristics of irradiating a laser light to an organic compound dispersed into a solvent."</p> <p><b>"Paragraph 0018</b></p> <p>As a method for dispersing the organic compound in the solvent, a dispersion stabilizing agent may be used, but because there is concern that it might remain in the form of impurities, when very pure particles are required, use of a dispersion stabilizing agent is undesirable. In the manufacturing method of the present invention, because the dispersibility of the organic compound is enhanced by laser light irradiation, rather a dispersed state achieved by using some kind of stirring apparatus and stirring the liquid is sufficient.</p> <p><b>Paragraph 0019</b></p> <p>For example, water, alcohol, and the like can be used as the solvent for dispersing the organic compound but it is preferable to select and use a solvent wherein the organic compound to be made into particles does not dissolve. If the organic compound is dispersed in a solvent containing aromatic rings in its chemical structure such as benzene and the like, when irradiating with an excimer laser at 248 nm, for example, the solvent itself will absorb the laser light, which is not desirable. In the selection of a dispersion solvent, one should be selected that the organic compound to be made into particles does not dissolve, and one that does not show absorption at the wavelength of the irradiating laser light.</p> <p><b>Paragraph 0020</b></p> <p>When an organic compound that is dispersed in a non-solvent is irradiated by a laser light at the absorption wavelength, the powder of the organic compound absorbs the light, and a rapid localized temperature increase occurs at the part absorbing the light. This temperature increase in the irradiated part occurs instantaneously after laser light irradiation, and because a temperature increase occurs around the irradiated part due to thermal conduction, when a relatively large powdered starting material is used, a steep temperature difference will arise between the part that absorbs light and the parts that do not absorb light. As a result, a pronounced internal stress occurs between the irradiated part of the powder and its surrounding parts, cracks are generated in the solid powder, and fragmentation occurs. When a powder has strong absorption at the irradiation wavelength of the laser light, the light absorption will occur mainly on the surface of the powder, and because a temperature difference occurs between the irradiated surface and the interior, internal distortion also</p>																				

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/018657

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V.

occurs in the powder and fragmentation will progress. Even when fragmentation progresses, and the amount of starting material powder becomes small and the laser light will be absorbed essentially uniformly throughout the powder, because the surface of the powder will be cooled by the surrounding solvent, a temperature distribution with the interior will occur resulting in stress and fragmentation will be achieved."

## "Paragraph 0021

In this manner the solvent used for dispersion of the organic compound is not merely used for dispersion, but it performs many roles such as facilitating cooling of the powder and recovery of the particles that are produced, as well as promoting fragmentation by penetrating the cracks formed in the powder by laser irradiation."

## "Paragraph 0022

Thus, the manufacturing method for particles of the present invention causes a rapid temperature difference to occur in the interior of the powder dispersed in the solvent due to laser light irradiation, and as a result it is a method wherein internal stress is excited, the powder fragments, and particles of the organic compound are obtained thereby. Therefore, the irradiating laser light can be any having the power to bring about stress due to heat in the interior of the powder to be made into particles. In addition, irradiation with excessively strong light will cause breakdown and degradation of the organic compound, which is undesirable."

Document 2 describes, for example:

## "Paragraph 0006

[Means for Solving the Problem]

The present invention provides a liquid particle dispersion for forming a film on a substrate wherein the stability of the liquid is increased by applying ultrasonic waves to a dispersion liquid after functional particles have been mixed and dispersed in a vehicle, and, even when it is formed into a film and baked at least ten of more hours after application of the ultrasonic waves, this liquid dispersion can form a color-unevenness-free, low-haze, uniform, high-quality, and light-transmitting coating."

## "Paragraph 0025

[Effect of the Invention]

In accordance with the method of the present invention, after mixing and dispersing functional particles in a vehicle, even if the dispersion is let stand at least ten or more hours thereafter, the particles do not agglomerate and stable, uniform, low-haze, light-transmitting, high-quality coating can be obtained. In addition, it can be suitably applied even to liquids wherein an anti-precipitation agent cannot be used, and in liquids wherein an anti-precipitation can be used, the tendency of the particles to precipitate will be extremely small; therefore this has the effect wherein a high-quality, light-transmitting coating can be obtained by a simple method in terms of task efficiency and the like." Judging from these descriptions, this authority finds that the inventions of claims 1, 2, 5-9, and 12-15 can be easily invented by persons skilled in the art based on the inventions described in documents 1 and 2, and therefore the inventions of claims 1, 2, 5-9 and 12-15 lack an inventive step.



WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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## Supplemental Box

Continuation of: Box V.

None of these documents describe "a method for manufacturing particles of a substance in a solvent that together comprise a liquid to be treated wherein irradiation by ultrasonic waves is applied to the liquid to be treated using the resonance frequency of the treatment chamber containing the liquid to be treated" that is the constituent element of the inventions of claims 3, 4, 10, and 11 of this application, and this matter is not obvious to persons skilled in the art. In addition, this matter cannot easily be conceived based on these documents so the inventions of claims 3, 4, 10, and 11 of this application are novel and involve an inventive step.

Document 1: JP 2001-113159 A (Dainippon Ink and Chemicals Co., Ltd.) 24 April 2001  
(Family: none)

Document 2: JP 11-269432 A (Central Glass Co., Ltd.) 5 October 1999 (Family: none)